

1 **ABSTRACT**

2       The fast dynamic measurement of bandwidth in a TCP network  
3 environment utilizes a single pair of packets to calculate bandwidth between two  
4 entities on a network (such as the Internet). This calculation is based upon the  
5 packet-pair technique. This bandwidth measurement is extremely quick. On its  
6 journey across a network, communication devices may delay the packet pairs. In  
7 particular, TCP networks have two algorithms designed to delay some packets  
8 with the goal of increasing the overall throughput of the network. However, these  
9 algorithms effectively delay a packet pair designed to measure bandwidth.  
10 Therefore, they distort the measurement. These algorithms are Nagle and Slow  
11 Start. The fast dynamic measurement of bandwidth implements countermeasures  
12 to overcome the delays imposed by these algorithms. Such countermeasures  
13 include disabling the application of the Nagle Algorithm; minimizing the buffering  
14 of packets by sending a "push" packet right after the packet pair; and avoiding the  
15 Slow Start Algorithm by priming it with a dummy packet.  
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